

## **WHAT IS CLAIMED IS:**

1                           1.       A cleaning composition for formed metal articles, the cleaning  
2   composition comprising water and:

3 A) an ethoxylate of an alcohol having Formula I:



5 wherein R<sub>1</sub> is a saturated or unsaturated, straight-chain or branched alkyl having from  
6 12 to 80 carbon atoms;

7 B) an inorganic pH adjusting component; and

8 C) at least one surfactant that is different than component A,  
9 wherein the cleaning composition has an average water-break-free percent reduction  
10 of less than 50% after 7 days aging.

1                           2.         The cleaning composition of claim 1 wherein the cloud point  
2     of the cleaning composition is greater than about 125° F.

1                   3. The cleaning composition of claim 1 wherein the cleaning  
2 composition is capable of cleaning an exterior wall of an aluminum can such that the  
3 percent of total surface area of the exterior wall which supports a continuous film of  
4 water is greater than 50% after the aluminum can is cleaned with the cleaning  
5 composition.

1                          4. The cleaning composition of claim 1 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 14 to 22 carbon atoms.

1                   5. The cleaning composition of claim 1 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 16 to 20 carbon atoms.

1                   6. The cleaning composition of claim 1 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 23 to 80 carbon atoms.

1                   7.     The cleaning composition of claim 1 wherein R<sub>1</sub> is a mixture  
2     of straight-chain and branched alkyl having from 14 to 50 carbon atoms.

1                   8.     The cleaning composition of claim 1 wherein R<sub>1</sub> is CH<sub>3</sub>(CH<sub>2</sub>)<sub>7</sub>-  
2     CH=CH(CH<sub>2</sub>)<sub>8</sub>-, CH<sub>3</sub>(CH<sub>2</sub>)<sub>17</sub>-, or CH<sub>3</sub>(CH<sub>2</sub>)<sub>13-14</sub>-.

1                   9.     The cleaning composition of claim 1 wherein component A is  
2     a 5 to 80 mole ethoxylate.

1                   10.    The cleaning composition of claim 9 wherein component A is  
2     a 5 to 80 mole ethoxylate and R<sub>1</sub> is a saturated or unsaturated, straight-chain or  
3     branched alkyl having from 20 to 70 carbon atoms.

1                   11.    The cleaning composition of claim 10 wherein:  
2                      component A is a 15 mole ethoxylate and R<sub>1</sub> is a saturated or  
3     unsaturated, straight-chain or branched alkyl having 13 carbon atoms; or  
4                      component A is a 11 to 12 mole ethoxylate and R<sub>1</sub> is a saturated or  
5     unsaturated, straight-chain or branched alkyl having 12 to 15 carbon atoms; or  
6                      component A is a 10 mole ethoxylate and R<sub>1</sub> is a saturated or  
7     unsaturated, straight-chain or branched alkyl having 16 carbon atoms; or  
8                      component A is a 10 mole ethoxylate and R<sub>1</sub> is a saturated or  
9     unsaturated, straight-chain or branched alkyl having 18 carbon atoms; or  
10                  component A is a 12 to 13 mole ethoxylate and R<sub>1</sub> is an 85% linear  
11     alkyl having 14 to 15 carbon atoms.

1                   12.    The cleaning composition of claim 1 wherein component A is  
2     a 14 mole or greater ethoxylate.

1               13.     The cleaning composition of claim 1 wherein R<sub>1</sub> is a saturated  
2     or unsaturated, straight-chain or branched alkyl having from 14 to 80 carbon atoms  
3     and the ethoxylate is a 10 mole or greater ethoxylate.

1               14.     The cleaning composition of claim 13 wherein the at least one  
2     surfactant that is different than component A is a surfactant selected from the group  
3     consisting of propoxylated alcohols, sodium 2-ethyl hexyl sulfate, polyethoxylated  
4     straight chain alcohols, modified polyethoxylated straight chain alcohols, alkyl  
5     polyethoxylated ethers with a propoxylate cap, modified oxyethylated straight chain  
6     alcohols, octylphenoxy polyethoxy ethanol, block-copolymers based on ethylene  
7     oxide and propylene oxide, and mixtures thereof.

1               15.     A metallic article treated with the cleaning composition of  
2     claim 1.

1               16.     The cleaning composition of claim 1 wherein  
2     the ethoxylate of an alcohol having Formula R<sub>1</sub>-OH is present in an  
3     amount from about 0.05 gram/liter to about 15 gram/liter of the cleaning  
4     composition;

5               the at least one surfactant that is different than component A is present  
6     in an amount from about 0.05 gram/liter to about 15 gram/liter of the cleaning  
7     composition; and

8               the inorganic acid is present in a positive amount less than or equal to  
9     about 20 gram/liter of the cleaning composition.

1               17.     The cleaning composition of claim 1 wherein the ratio of the  
2     ethoxylate having Formula R<sub>1</sub>-OH to the at least one surfactant that is different than  
3     component A is at least 1:1.

1               18.     The cleaning composition of claim 1 wherein  
2               the ethoxylate of an alcohol having Formula R<sub>1</sub>-OH is present in an  
3               amount greater than about 15 gram/liter to about 200 gram/liter of the cleaning  
4               composition;

5               the at least one surfactant that is different than component A is present  
6               in an amount greater than about 15 gram/liter to about 200 gram/liter of the cleaning  
7               composition; and

8               the inorganic acid is present in a positive amount less than about 600  
9               gram/liter of the cleaning composition.

1               19.     A cleaning composition for formed metal articles, the cleaning  
2               composition comprising water and:

3               A)     an ethoxylate of an alcohol having Formula I:



5               wherein R<sub>1</sub> is a saturated or unsaturated, straight-chain or branched alkyl having from  
6               12 to 80 carbon atoms;

7               B)     an inorganic pH adjusting component; and

8               C)     at least one surfactant that is different than component A,  
9               wherein the cleaning composition is capable of cleaning an exterior wall of an  
10          aluminum can such that the percent of total surface area of the exterior wall which  
11          supports a continuous film of water is greater than 50% after the aluminum can is  
12          cleaned with the cleaning composition.

1               20.     The cleaning composition of claim 19 wherein R<sub>1</sub> is a saturated  
2               or unsaturated, straight-chain or branched alkyl having from 14 to 22 carbon atoms.

1               21.     The cleaning composition of claim 19 wherein R<sub>1</sub> is a saturated  
2               or unsaturated, straight-chain or branched alkyl having from 16 to 20 carbon atoms.

1                   22.     The cleaning composition of claim 19 wherein R<sub>1</sub> is a saturated  
2     alkyl having from 16 to 20 carbon atoms.

1                   23.     The cleaning composition of claim 19 wherein R<sub>1</sub> is a saturated  
2     or unsaturated, straight-chain or branched alkyl having from 23 to 80 carbon atoms.

1                   24.     The cleaning composition of claim 19 wherein R<sub>1</sub> is a mixture  
2     of straight-chain and branched alkyl having from 14 to 50 carbon atoms.

1                   25.     The cleaning composition of claim 19 wherein R<sub>1</sub> is CH<sub>3</sub>(CH<sub>2</sub>)<sub>7</sub>-  
2     CH=CH(CH<sub>2</sub>)<sub>8</sub>-, CH<sub>3</sub>(CH<sub>2</sub>)<sub>17</sub>-, or CH<sub>3</sub>(CH<sub>2</sub>)<sub>13-14</sub>-.

1                   26.     The cleaning composition of claim 19 wherein component A  
2     is a 5 to 80 mole ethoxylate.

1                   27.     A cleaning composition for formed metal articles, the cleaning  
2     composition comprising water and:

3                   A)     an ethoxylate of an alcohol having Formula I:



5     wherein R<sub>1</sub> is a saturated or unsaturated, straight-chain or branched alkyl having from  
6     12 to 80 carbon atoms;

7                   B)     an inorganic pH adjusting component; and

8                   C)     at least one surfactant that is different than component A,  
9     wherein the cloud point of a working composition of the cleaning composition is  
10    greater than about 125° F.

1                   28.     The cleaning composition of claim 27 wherein the cloud point  
2     of the cleaning composition is greater than about 150° F.

1                   29.     The cleaning composition of claim 27 wherein R<sub>1</sub> is a saturated  
2     or unsaturated, straight-chain or branched alkyl having from 14 to 22 carbon atoms.

1                   30.     The cleaning composition of claim 27 wherein R<sub>1</sub> is a saturated  
2     or unsaturated, straight-chain or branched alkyl having from 16 to 20 carbon atoms.

1                   31.     The cleaning composition of claim 27 wherein R<sub>1</sub> is a saturated  
2     alkyl having from 16 to 20 carbon atoms.

1                   32.     The cleaning composition of claim 27 wherein R<sub>1</sub> is a saturated  
2     or unsaturated, straight-chain or branched alkyl having from 23 to 80 carbon atoms.

1                   33.     The cleaning composition of claim 27 wherein R<sub>1</sub> is a mixture  
2     of straight-chain and branched alkyl having from 14 to 50 carbon atoms.

1                   34.     The cleaning composition of claim 27 wherein R<sub>1</sub> is CH<sub>3</sub>(CH<sub>2</sub>)<sub>7</sub>-  
2     CH=CH(CH<sub>2</sub>)<sub>8</sub><sup>-</sup>, CH<sub>3</sub>(CH<sub>2</sub>)<sub>17</sub><sup>-</sup>, or CH<sub>3</sub>(CH<sub>2</sub>)<sub>13-14</sub><sup>-</sup>.

1                   35.     The cleaning composition of claim 27 wherein component A  
2     is a 5 to 80 mole ethoxylate.

1                   36.     A cleaning composition for formed metal articles, the cleaning  
2     composition comprising water and:

3                   A)     an ethoxylate of an alcohol having Formula I:



5     wherein R<sub>1</sub> is a saturated or unsaturated, straight-chain or branched alkyl having from  
6     12 to 80 carbon atoms and the ethoxylate is a 14 mole or greater ethoxylate;

7                   B)     an inorganic pH adjusting component; and

8                   C)     at least one surfactant that is different than component A.

1                   37. The cleaning composition of claim 36 wherein the cloud point of  
2 the cleaning composition is greater than about 125° F.

1                   38. The cleaning composition of claim 36 wherein the inorganic  
2 pH adjusting component is an inorganic acid or a base.

1                   39. The cleaning composition of claim 36 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 14 to 22 carbon atoms.

1                   40. The cleaning composition of claim 36 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 16 to 20 carbon atoms.

1                   41. The cleaning composition of claim 36 wherein R<sub>1</sub> is a saturated  
2 alkyl having from 16 to 20 carbon atoms.

1                   42. The cleaning composition of claim 36 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 23 to 80 carbon atoms.

1                   43. The cleaning composition of claim 36 wherein R<sub>1</sub> is a mixture  
2 of straight-chain and branched alkyl having from 14 to 50 carbon atoms.

1                   44. The cleaning composition of claim 36 wherein R<sub>1</sub> is CH<sub>3</sub>(CH<sub>2</sub>)<sub>7</sub>-  
2 CH=CH(CH<sub>2</sub>)<sub>8</sub>-, CH<sub>3</sub>(CH<sub>2</sub>)<sub>17</sub>-, or CH<sub>3</sub>(CH<sub>2</sub>)<sub>13-14</sub>-.

1                   45. A cleaning composition for formed metal articles, the cleaning  
2 composition comprising water and:

3                   A) an ethoxylate of an alcohol having Formula I:



5                   wherein R<sub>1</sub> is a saturated or unsaturated, straight-chain or branched alkyl having from  
6 14 to 80 carbon atoms and the ethoxylate is a 10 mole or greater ethoxylate;

- 7                   B)     an inorganic pH adjusting component; and  
8                   C)     at least one surfactant that is different than component A.

1                          46. The cleaning composition of claim 45 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 14 to 22 carbon atoms.

1                          47. The cleaning composition of claim 45 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 16 to 20 carbon atoms.

1                          48.     The cleaning composition of claim 45 wherein R<sub>1</sub> is a saturated  
2 alkyl having from 16 to 20 carbon atoms.

1                          49. The cleaning composition of claim 45 wherein R<sub>1</sub> is a saturated  
2 or unsaturated, straight-chain or branched alkyl having from 23 to 80 carbon atoms.

1                   50. The cleaning composition of claim 45 wherein R<sub>1</sub> is a mixture  
2 of straight-chain and branched alkyl having from 14 to 50 carbon atoms.

1                       51. The cleaning composition of claim 45 wherein R<sub>1</sub> is CH<sub>3</sub>(CH<sub>2</sub>)<sub>7</sub>-  
2     CH=CH(CH<sub>2</sub>)<sub>8</sub>, CH<sub>3</sub>(CH<sub>2</sub>)<sub>17</sub>-, or CH<sub>3</sub>(CH<sub>2</sub>)<sub>13-14</sub>-.

1                       52.     The cleaning composition of claim 45 wherein component A  
2     is a 5 to 80 mole ethoxylate.

1                   53. A method of cleaning a metal surface, the method comprising:  
2                         a) contacting a metal surface with a cleaning composition at a  
3 sufficient temperature and for a sufficient time to clean the metal surface, the cleaning  
4 composition comprising water and:

5 A) an ethoxylate of an alcohol having Formula I  
6  $R_1-OH$  I

7       wherein R<sub>1</sub> is a saturated or unsaturated, straight-chain or branched alkyl having from  
8       12 to 80 carbon atoms;

9                  B)     an inorganic pH adjusting component; and  
10                 C)     at least one surfactant that is different than component A,  
11        wherein the cleaning composition is capable of cleaning an exterior wall of an  
12       aluminum can such that the percent of total surface area of the exterior wall which  
13       supports a continuous film of water is greater than 50% after the aluminum can is  
14       cleaned with the cleaning composition.

1               54.     The method of claim 53 wherein the metal surface is contacted  
2       with the cleaning solution for about 1 second to about 1800 seconds.

1               55.     The method of claim 53 wherein the metal surface is contacted  
2       with the cleaning solution at a temperature from about 60°F to about 180°F.

1               56.     The method of claim 53 further comprising:  
2                 b)     rinsing the metal surface with water; and  
3                 c)     drying the metal surface.

1               57.     The method of claim 56 further comprising contacting the metal  
2       surface with a conversion coating.

1               58.     The method of claim 56 further comprising contacting the metal  
2       surface with a surface modifying agent.

1               59.     The method of claim 56 wherein R<sub>1</sub> is a saturated or  
2       unsaturated, straight-chain or branched alkyl having from 14 to 22 carbon atoms.

1               60.     The method of claim 56 wherein R<sub>1</sub> is a saturated or  
2       unsaturated, straight-chain or branched alkyl having from 16 to 20 carbon atoms.

1                   61.     The method of claim 56 wherein R<sub>1</sub> is a saturated alkyl having  
2     from 16 to 20 carbon atoms.

1                   62.     The method of claim 56 wherein R<sub>1</sub> is a saturated or  
2     unsaturated, straight-chain or branched alkyl having from 23 to 80 carbon atoms.

1                   63.     The method of claim 56 wherein R<sub>1</sub> is a mixture of straight-  
2     chain and branched alkyl having from 14 to 50 carbon atoms.